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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,102	01/16/2004	Li Li	M4065.0909/P909-A	4986
24998	7590	01/26/2005	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			PHAM, THANH V	
2101 L Street, NW			ART UNIT	
Washington, DC 20037			PAPER NUMBER	
			2823	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/758,102

Applicant(s)

LI ET AL.

Examiner

Thanh V Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21, 22, 24-26, 28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-22, 24-26 and 28-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 21, 24-25 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Zahorik et al. US 5,789,277 (provided by the applicant).

*Re claims 21 and 25*, the Zahorik et al. reference discloses an intermediate structure in fig. 10, comprising: a substrate, a first conductor 20 formed on said substrate; an insulator 80 formed on said first conductor, at least one via 110 formed within said insulator and extending to said first conductor; a metallic material 120 formed in said at least one via; and a flowable oxide material 150 (*re claim 28*) localized only within said via and over said metallic material within said via, col. 9, line 1 and figs. 9-12.

*Re claim 24*, the metallic material 120 is deposited on a surface of insulator 80.

***Claim Rejections - 35 USC § 103***

3. Claims 22, 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zahorik et al. as applied to claims 21, 24-25 and 28 above, and further in view of Kozicki US 6,487,106 B1 (provided by the applicant) and Iba US 5,883,006.

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The Zahorik et al. reference discloses substantially all of the instant invention but lacks using silver for the metallic material and the silicon oxide is in a flowable form in a temperature range of 50-90 °C.

The Kozicki reference discloses silver electrode 220/230 is used (claim 3 and 5) within trench or through-hole (col. 3, line 25) in structure 100 of RAM construction.

The Iba reference discloses flowable oxide 116 in trench 114 to cover metal 104 is applied in an intermediate structure by spin coating at room temperature.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply silver for the metallic material and flowable oxide in the recited temperature range as the materials would be selected in order to maintain a desired dissolved metal concentration (Kozicki's col. 4, line 63) and to provide a better structure at the contact point of the two different material in the trench (Iba's col. 1) in accordance with the structure formation as taught by Zahorik et al.

### ***Response to Arguments***

4. Applicant's arguments filed 12/06/2004 have been fully considered but they are not persuasive.

5. Applicant argues that Zahorik fails to teach or suggest "a flowable oxide layer restricted within said via and over said metallic material within said via" as recited in claims 21 and 25 in the intermediate structure. Applicant is directed to Zahorik's figs. 9-12 wherein the above limitation clearly shown.

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6. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this instance, the Kozicki is used for the silver as the metallic material, the Iba is used for the inherent characteristic of flowable oxide at room temperature and the Zahorik is used for the intermediate structure.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh V. Pham whose telephone number is 571-272-1866. The examiner can normally be reached on M-Th (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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01/12/2005

  
George Fourson  
Primary Examiner